Traffic Technical Memorandum

Date	22 November 2004
To	Nicole McIntosh, WSF
From	Mark Wegener, Jacobs Civil Inc.
Subject	Task AO: Point Defiance/Tahlequah Terminal Siting Feasibility Study Traffic Technical Memorandum

The Point Defiance/Tahlequah Terminal Siting Feasibility Study has many traffic-related components that require analysis and conclusions based on current traffic data and future projected traffic data. This memorandum summarizes the relevant data that has been collected and analysis that has been performed for the project.

WSF Service Plan

For the purposes of this study, we assume that WSF will operate a vessel that can hold approximately 100 vehicles on this route, and the terminal and holding area are being planned to accommodate that. The vessel size will be verified the by the WSF Planning Department at a later date. According to Leonard Smith of the WSF Operations Department, WSF generally plans for holding areas that can hold 1.5 times the vehicle capacity of the ferry, as land availability permits. This allows for a full ferry load of vehicles to wait off of municipal streets, and allows for flexibility in the holding area to group certain vehicles together and allow priority vehicles to maneuver.

Traffic Volumes

Ferry Vehicles

According to data collected by Demich Engineering in March 2003, the peak vehicular demand on this route is about 100 vehicles per hour. That happens at the 5:30 PM sailing on the Tacoma side. The current vessel holds approximately 65 vehicles and sails about every 50 - 55 minutes, which results in a queue forming in the afternoons. Changing to a 100-vehicle vessel will allow the ferry to keep up with the demand, and building a 150-vehicle holding area will keep all the waiting vehicles off of municipal streets.

According to WSDOT statistics of ferry crossings, the AADT for this route in 2003 was essentially the same as it was in 1993, although there was some variation during that period. It was 1,169 in 1993, then reached a high of 1,397 in 1999, then reduced back to 1,143 in 2003. Based on this trajectory, we don't expect significant changes in traffic volumes in the future. The planned 100-vehicle vessel will accommodate this level of traffic well. Even if the peak hour vehicle volumes increase by 20% to 120 vph, most vehicles will sail on the next ferry that leaves after they arrive in holding, and the typical queue will not extend outside the holding area. For this study, we recommend planning to accommodate a 20% increase in traffic.

Roadways

Existing traffic counts for the roads adjacent to the proposed ferry terminals have been acquired from King County and the City of Tacoma. They are attached at the end of this memo. For the ASARCO site, the counts for N. Ruston Way are from the City of Tacoma. They show the daily volume for N.

Ruston Way in February 2003 was about 5,000 vehicles. For the Tahlequah site, the counts for Tahlequah Road and Vashon Highway are from King County. They show that in 2003, the daily volume for Tahlequah Road was about 500 vehicles, and the daily volume for Vashon Highway was about 1,900 vehicles.

Other Access Modes

The WSF 1999 Travel Survey determined existing access modes for all ferry routes in 1999. It is reasonable to use these percentages for planning purposes. The following table shows the percentage of ferry riders for different modes on the Point Defiance – Tahlequah route from the survey, the percentages applied to the 2003 Peak Hour data, and the Peak Hour values we recommend for planning purposes.

Travel Mode	1999 Percent	2003 Peak Hour	Planning Peak Hour
Arrive in vehicle and board in vehicle	84%	100	120
Arrive in vehicle and board on foot	11%	13	15
Arrive by walk/bike/ bus and board on foot	2.5%	3	4
Arrive by bike and board by bike	2.5%	3	4
Total Passengers	100%	119	143

Parking

Survey and Inventory

The following is a summary of the existing Park-and-Ride lots serving the route.

	Point Defiance	Tahlequah
Source of Data	PSRC Park & Ride Inventory, 1/96	Metro Online
Lot name	Point Defiance Ferry Terminal	
Location	West of Terminal Building, Point Defiance Park	Vashon Hwy SW & SW Tahlequah Rd
No. Stalls	79	36
Weekday Utilization	60%	90% by 9am
Bus Routes	PT 10, 11	Metro 118
Cost	Daytime free, overnight cost unknown	Unknown

Future Parking Demand Estimate

Statistics on current parking practices on the route are very limited. The best way to acquire parking statistics is to conduct an extensive ferry user survey, which is not appropriate for this early planning effort. On the Tacoma side, we recommend planning to maintain the current number of Park-and-Ride stalls at 80.

On the Tahlequah side, we recommend increasing the number of Park-and-Ride stalls. According to WSF employees' observations, it is known that the existing parking, which consists of the 36 Park-and-Ride stalls and a number of on-street spaces, regularly fill up every day, and some ferry users park a considerable distance away from the terminal and walk. Given that this demand is higher than the current supply, and the knowledge that there is a very limited amount of land to use for additional parking spaces, we recommend increasing the number of Park-and-Ride stalls as much as possible.

Toll Plaza

The Tacoma side will have a toll plaza and the Tahlequah side will not. According to WSF's consultant, Rick Kiesser, the average vehicle fare transaction in the WSF system takes 23 seconds per vehicle. The maximum rate the ferry will take vehicles away from the Tacoma side in the afternoon will be 120 vehicles every 55 minutes, which is 131 vehicles per hour. However, it is fair to assume that vehicles will not arrive uniformly during the 55 minutes, and most of them will arrive during the second half. We assume conservatively that all of the vehicles will arrive during the second 28 minutes, which is 257 vehicles per hour.

At 23 seconds per vehicle, one tollbooth can serve 156.5 vehicles per hour, and two can serve 313. Therefore, two tollbooths are needed to serve the peak vehicle demand. We recommend adding a third tollbooth to increase the flexibility of the toll plaza to accommodate shift changes, maintenance, and unusual situations that may arise.

Traffic Control Strategies

The traffic effects of the proposed project Options have been analyzed. The introduction of a larger ferry vessel is not expected to have a significant effect on the existing traffic at either of the terminal locations. Both Tahlequah Road at the Tahlequah site and N. Ruston Way at the ASARCO site have adequate capacity to easily absorb the additional vehicles from a larger vessel.

Current demand for the ferry peaks at about 100 vehicles per hour, and the planning projection for this project is 120 vehicles per hour. All of the Options include the ferry holding areas and queue lanes that are large enough to hold all of the expected ferry-bound vehicles.

General traffic control concepts have been laid out for all of the Options with the objectives of providing safe vehicle and pedestrian movements and uninterrupted unloading of ferry vehicles. At the Tahlequah site, the traffic volumes on Tahlequah Road are very low at about 1,900 vehicles per day, and given the limited opportunities for further development near the terminal, they are not expected to grow significantly. Traffic signals are not recommended for the proposed terminal. However, traffic signals are recommended for the holding area in Tahlequah Option 4 in order to automatically direct vehicles to load the ferry without requiring WSF staff on site.

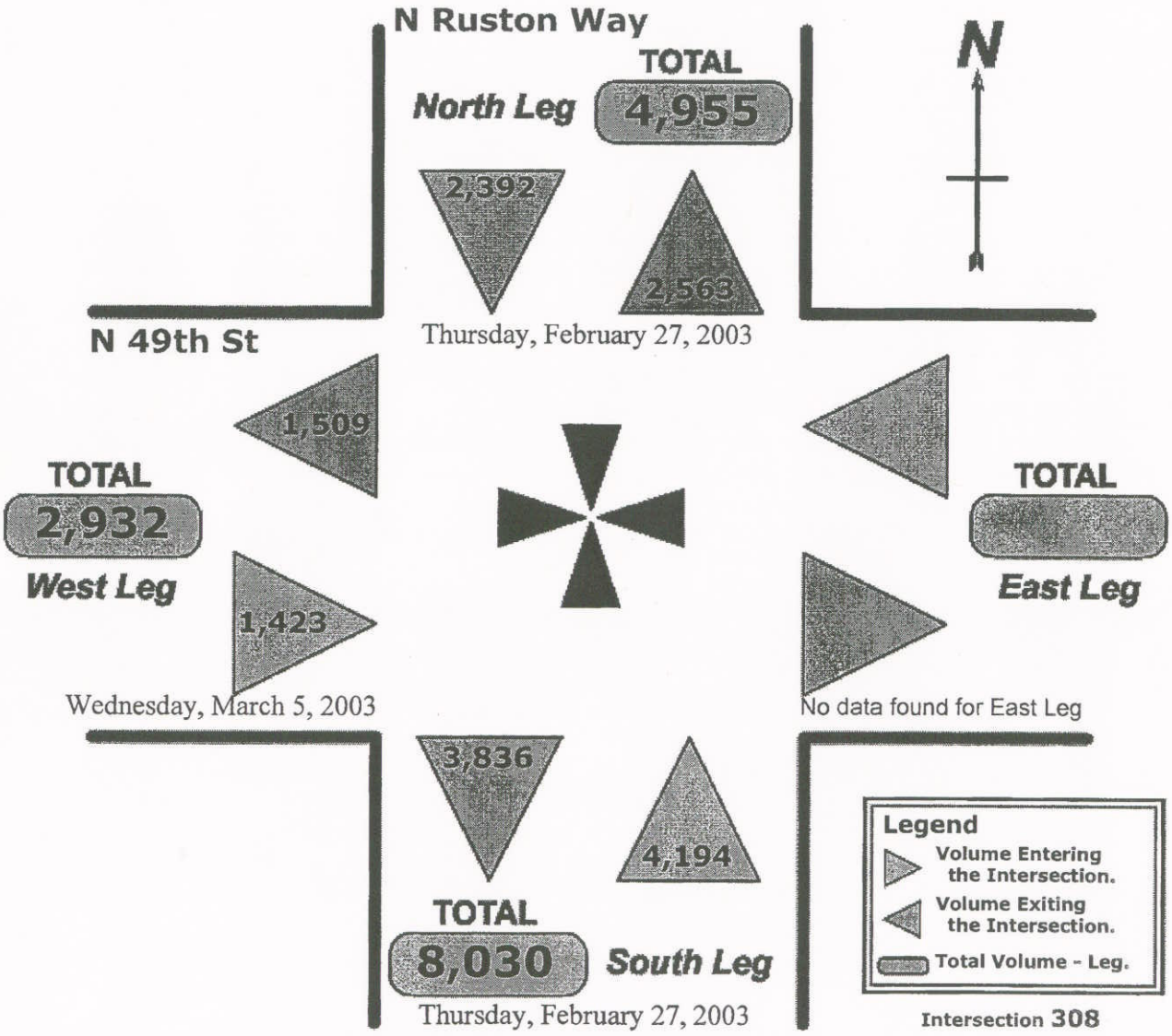
At the ASARCO site, traffic volumes on N. Ruston Way are somewhat higher at about 5,000 vehicles per day. Signals are recommended at the terminal exit for ASARCO Options 1 and 2, and at the intersection of the Yacht Club Road and N. Ruston Way for Option 3.

Average Daily Traffic Counts
24 Hour Period

N 49th St & N Ruston Way

Select an Intersection:
Select Intersection

View Small Layout
View Historical Counts



Comments: This is a 'T' intersection.

King County 1993-2003 Historical Counts by Location

Average Daily Traffic Volumes

ADT File Number	Street	Leg	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
7036	VASHON HWY	N	1884	1662	2144	1998	2240*	2180*	2140*	2090*	2050*	2010*	1968
7036	VASHON HWY	N-NB	1013	859	1111	1008	1150*	1120*	1100*	1080*	1060*	1030*	1012
7036	VASHON HWY	N-SB	871	803	1033	990	1090*	1060*	1040*	1020*	1000*	980*	956
7036	FERRY DOCK	S	370*	370*	370*	370*	310*	310*	300*	310*	300*	300*	288
7036	TAHLEQUAH RD	SE	501	455	530	431	310*	310*	300*	310*	300*	300*	288
7036	TAHLEQUAH RD	SE-NWB	262	264	289	230	160*	160*	160*	160*	160*	160*	156
7036	TAHLEQUAH RD	SE-SEB	239	191	241	201	140*	140*	140*	140*	140*	140*	132
7036	FERRY DOCK	S-NB	370*	370*	370*	370*	310*	310*	300*	310*	300*	300*	288
7036	FERRY DOCK	S-SB	370*	370*	370*	370*	310*	310*	300*	310*	300*	300*	288

* = Projected Count

The leg code indicates the direction and location of the traffic count relative to the intersection; for example: N-NB is the leg north of the intersection and the flow is in the north-bound direction.

For questions regarding this information please call (206)296-6596